

SYNOPSIS OF THE GENUS *HETERELMIS* SHARP IN THE
UNITED STATES, WITH DESCRIPTION OF A NEW SPECIES
FROM ARIZONA (COLEOPTERA, DRYOPOIDEA, ELMIDAE)¹

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INTRODUCTION

In 1870, Horn described *Elmis glaber*, based upon a single specimen from the San Pedro River of Arizona. LeConte (1874) described *Elmis vulneratus* from one specimen taken by Belfrage in Texas. In 1882, Sharp created the Genus *Heterelmis* for three new species he was describing from Guatemala, *H. obscurus*, *H. obesus*, and *H. simplex*. In 1887, Sharp added a new species from Mexico, *H. longulus*. Grouvelle described *H. dubia* from Brazil (1888) and *H. neglecta* from Bolivia (1896), utilizing the feminine ending to agree with the gender of the generic name. Hinton described *H. limnoides* and *H. pubipes* from Brazil (1936) and, in 1940, redescribed the genus and Sharp's Mexican species, along with two new species (*H. acicula* and *H. tarsalis*) and a new subspecies (*H. obesa plana*) from Mexico. In his 1940 paper, Hinton listed a specimen of *H. obscura* from Ft. Sam Houston, Texas. Brown (1956) and Sanderson and Brown (1959) reported *Heterelmis* sp. from Johnston County, Oklahoma on the basis of a single specimen. Burke (1963) stated that *Heterelmis* sp. was ". . . fairly common from April through October in streams in the

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Balconian, southern half of the Texan, and northern portion of the Tamaulipan biotic provinces . . ." of Texas. He noted that . . . "*Heterelmis vulnerata* was described from Texas but the species is not recognizable from available descriptions. Since the species at hand is so common and widespread in the state, it is quite possibly conspecific with LeConte's *vulnerata*." Burke also cited Hinton's (1940) listing of *H. obscura* Sharp from Texas, but added . . . "None of the considerable number of specimens of *Heterelmis* collected during this study agrees with Hinton's description and figures of genitalia of *H. obscura*." The only specific locality Burke mentions is Devil's River west of Del Rio, which habitat is now submerged in a large impoundment. Spangler (1966) reported *H. acicula* Hinton, *H. obesa* Sharp, and *H. simplex* Sharp from Peru. Delève (1968) described *H. convexicollis*, *H. impressicollis*, *H. lucida*, and *H. pusilla* from Ecuador, transferred Grouvelle's *Helmis apicata* (1896) of Ecuador to the genus *Heterelmis*, and reported *H. neglecta* Grouvelle from Ecuador. Hinton (1971) described a new subspecies, *H. simplex codrus*, from Trinidad and Tobago. So far as I am aware, these constitute all distributional records published to date for the entire genus. To sum up previously published records for the United States: Arizona—the type specimen of *H. glabra* (Horn) from the San Pedro River; Oklahoma—one specimen of undetermined species from near Tishomingo; Texas—the type specimen of *H. vulnerata* (LeConte) without locality data, one specimen from Ft. Sam Houston identified as *H. obscura* Sharp (probably *H. vulnerata*, which is externally almost indistinguishable from *H. obscura*) and an indeterminate number of specimens from various localities, presumably representing *H. vulnerata* (LeConte), but perhaps also representing *H. glabra* (Horn).

Among miscellaneous dryopoids sent to me for identification by Karl Stephan of Tucson, Arizona were 7 specimens apparently representing an undescribed species of *Heterelmis*. Upon request, he returned to the same locality and collected 64 additional adults and a larva. These have provided the basis for the following description. I take pleasure in naming this new species for the collector, Mr. Karl H. Stephan.

***Heterelmis stephani* NEW SPECIES (Fig. 1-10)**

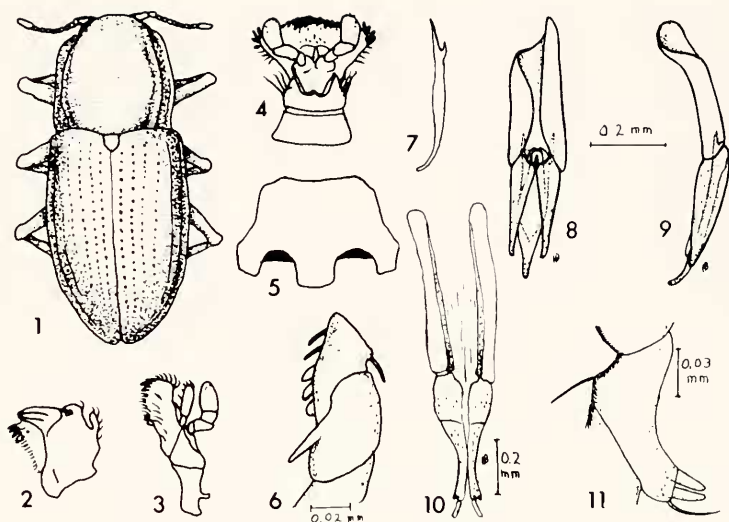
MALE.—Length 2.3-2.6 mm; breadth 1.05-1.20 mm. Body elongate ovoid, sides subparallel; elytra barely wider than prothorax; moderately strongly convex

(Fig. 1). Surface inconspicuously pubescent, clothed with fine, golden, recumbent hairs. Cuticle moderately shining, ranging in color from light brown to dark brown, the elytra often lighter than the pronotum; legs light brown to reddish brown; antennae and mouthparts testaceous to reddish brown.

Head without distinct impressions, although slightly impressed along coronal and frontal sutures; frontal angle slightly produced above mesial margin of antennal socket; surface minutely and rather densely eroded, each low callosity being somewhat smaller than an eye facet and bearing a pale recumbent hair. The bases of the hairs are about 0.02-0.03 mm apart, the hairs being about 0.03-0.04 mm long. Fronto-clypeal suture deep and broadly, shallowly emarginate. Clypeus with anterior margin feebly, arcuately emarginate, the angles broadly rounded; surface rather similar to that of frons but smoother, the callosities being smaller or even imperceptible though the hairs are about the same in distribution and size. Marginal hairs not noticeably enlarged. Labrum about twice as broad as long, the anterior margin feebly arcuate, the angles broadly rounded; surface smooth; hairs frequently clustered in twos or threes toward middle, those along angles projecting forward and curving medially, slightly enlarged; middle third of anterior margin bordered by short (0.003-0.005 mm), densely packed hairs perceptible only at very high magnifications (best seen mounted on a slide and viewed at magnifications above 400 X). Antenna 11-segmented, the first and last segments largest and subequal in size, though the last is slightly longer; segments 2 and 10 subequal; segment 3 conspicuously smaller and slenderer than 2; segments 4-6 subequal and smallest, segments 7-9 approaching the size of segment 10. Mandible (Fig. 2) with 3 subacute apical teeth and a lateral marginal process; prosthema membranous, well-developed, with medially-directed hairs basally and spines apically. Maxilla (Fig. 3) with cardo distinctly longer than wide; palpifer well developed; palp 4-segmented, the apical segment twice as long as wide; galea 2-segmented, the apical segment 3 times as long as wide, with sides subparallel; lacinia bordered apically by a dense brush of long, curved hairs and medially by somewhat heavier recurved hairs or spines. Labium (Fig. 4) with palp 3-segmented and moderately distinct palpiger; ligula transverse, broader than mentum.

Pronotum at broadest point, which is about basal third, broader than long (1.05:0.90 mm), and base broader than apex (1.00:0.65 mm). Sides broadly arcuate at basal third and in anterior third, feebly sinuate near middle. Basal margin bisinuate on each side. Lateral margins feebly explanate, produced at anterior angles. Disk rather strongly convex, without distinct impressions or with a feeble median transverse impression; occasional individuals with very feeble oblique impressions in basal half. Sublateral carinae usually displaced near middle, often just above or anterior to a bulge or rounded protuberance on each side between basal third and middle. Surface of disk glabrous, with inconspicuous, shallow punctures from which the hairs arise. The punctures are separated by less than to about 3 times their diameters. Sides between sublateral carinae and lateral margins with granules almost the size of eye facets, mostly separated from one another by distances slightly greater than their own diameters.

Elytra twice as long as pronotum (1.8:0.9 mm), broadest near middle. Striae very feebly impressed. Strial punctures usually round, shallow to moderately deep;



FIGURES: 1-11. *Heterelmis stephani* n. sp. All figures were traced from photographs of specimens. 1. Dorsal aspect of pinned adult. 2. Mandible. 3. Maxilla. 4. Labium. 5. Prosternum in outline. 6. First 2 segments of tarsus and base of third segment, showing 3 short, stout spines on basal segment and tapering spine on second segment. 7. Penis (median lobe of aedeagus) in lateral aspect. 8. Male genitalia (aedeagus) in dorsal aspect. 9. Male genitalia in lateral aspect from left side. 10. Female genitalia. 11. *Heterelmis longula*. Basal segment of front tarsus, showing apical pair of stout spines. (From Hinton, 1940.)

on disk separated within stria by once to twice their diameters, between striae (intervals) by about 3 to 4 diameters. Second, third, and fourth intervals distinctly broader than sutural interval. Surface of intervals just posterior to humerus between sublateral carinae with a few small granules like those of pronotum, elsewhere with only fine punctures from which the hairs arise. With a few larger erect hairs interspersed among the small recumbent hairs. Lateral margins feebly serrate and explanate. Inner sublateral carinae extend only to about apical fifth, the outer sublateral carinae extending almost to apex.

Scutellum flat, pentagonal with rounded basal and lateral angles; surface like that of nearby striae intervals of elytra.

Prosternum broader than long (0.750:0.625 mm), the broadest point being near basal fourth (Fig. 5); strongly deflexed at about apical third, apical margin broadly truncate, the angles broadly rounded; prosternal process about as broad as long (about 0.25 mm) or slightly broader, and shallowly concave; on each side from base of process a fine carina extends anteriorly, ending upon the deflexed portion of prosternum. Disk of prosternum between carinae broadly convex, clothed rather sparsely with inconspicuous decumbent hairs.

Mesosternum concave between coxal cavities and joined to anterior concave

portion of metasternum by a transverse sutural ridge. Metasternum with disk feebly convex on each side of midventral line, which extends from posterior margin somewhat beyond middle; anterior to this point the surface descends to become medially shallowly concave. Surface sculpture of metasternal disk similar to that of prosternal disk.

First abdominal sternite on each side with a carina along metacoxal margin and extending obliquely latero-posteriorly almost to apical margin. Surface between carinae broadly convex and smooth, with sparse hairs like those of metasternal disk. This median glabrous region extends onto the second and third sternites, tapering all the way. Remaining portions of sternites tomentose.

Legs with a brush of golden tomentum on the mesial surface of each tibia, bordered by a row of small spines. Basal segment of tarsus with 3 short, stout spines and several longer, slenderer ones (Fig. 6); second segment with a rather long, stout spine.

Genitalia (Figs. 7-9) with both penis (middle piece) and parameres relatively slender; penis with median basal projection narrow and tapering, and with apical portion decurved beyond apices of parameres.

FEMALE.—Generally similar to male externally, except for proportions (e.g., pronotum 0.93 mm broad and 0.875 mm long, 0.90 mm broad at base and 0.65 mm at apex; elytra more than twice as long as pronotum, being 1.85 mm long; prosternum proportionately broader, being 0.88 mm wide and 0.62 mm long). Transverse sutural ridge between mesosternum and metasternum raised medially. Genitalia relatively elongate (Fig. 10).

Type: Male to be deposited in the Canadian National Museum, Ottawa. UNITED STATES: Arizona, Pima County, Santa Rita Mountains, Madera Canyon, Bog Springs, collected May 16, 1970 by Karl Stephan.

Paratypes: 63 with same data as type; 7 from same locality but collected February 6, 1969 by Karl Stephan. Paratypes will be deposited in the collection of Karl Stephan; the British Museum of Natural History in London; the U. S. National Museum of Natural History in Washington, D. C.; the Illinois Natural History Survey in Urbana; the California Academy of Sciences in San Francisco; and the Stovall Museum of Science and History, University of Oklahoma, Norman.

COMPARATIVE NOTES.—This species is probably closest to *Heterelmis obesa* and *H. longula*, the general body contours being quite like those of *H. longula*, and the parameres of the male genitalia being devoid of an inner apical fringe of hairs. From both of these species it differs in lacking the closely appressed pair of apical spines on the first tarsal segment, having instead on this tarsal segment a row of 3 short, stumpy spines. It also differs from them in having proportion-

ately longer apical segments on the maxillary palp, the labial palp, and the galea. The female genitalia are more elongate. The male genitalia most resemble those of *H. obesa*, but the apices of both penis and parameres in lateral aspect are blunt or rounded, rather than acute. *H. stephani* n. sp. also differs from *H. longula* in being considerably smaller (2.3-2.6 mm long as compared with 3.5-4.0 mm) and in lacking distinct transverse and longitudinal pronotal impressions. It resembles *H. obesa plana* and *H. simplex* in lacking these distinct impressions, differing thus from typical *H. glabra*, *H. vulnerata*, and *H. obscura*. From all these it also differs in having 3 short, stout spines on the first tarsal segment. The male genitalia of *H. stephani* n. sp. differ from those of *H. glabra* and *H. obscura* in lacking an inner apical fringe of hairs on the parameres, from *H. obscura* in having slender parameres and penis, and from *H. glabra* and *H. vulnerata* in having the basal piece distinctly longer than the penis and parameres.

ECOLOGICAL NOTE—The habitat is unusual in that the steram normally dries up each year.

OTHER RECORDS OF HETERELMIS

H. glabra (Horn) 1870. Type from San Pedro River, Arizona.

Synonym: *H. acicula* Hinton 1940.

My collection includes considerable numbers of specimens from Mexico and Central America identifiable in Hinton's key as *H. acicula* Hinton 1940. Since these appear to be identical with my specimens of *H. glabra* (Horn) 1870 from Arizona, I am consigning *H. acicula* to synonymy with *H. glabra*.

I have collected additional specimens of *H. glabra* as follows: ARIZONA—Coconino Co.: Oak Creek s. Flagstaff, 19-IV-69 (1); Yavapai Co.: Verde River s.e. Camp Verde, 9-VII-69 (34 adults and 4 larvae); West Clear Creek s.e. Camp Verde, 9-VII-69 (17) and 8-VII-71 (4); Oak Creek s. Sedona, 9-VII-71 (5); Gila Co.: East Verde River n.w. Payson, 8-VII-69 (1 larva); TEXAS—Brewster Co.: Rio Grande at mouth of Santa Elena Canyon in Big Bend National Park, 16-VII-68 (9 adults and 3 larvae); Rio Grande in Boquillas Canyon in Big Bend National Park, 17-VII-68 (1).

H. obesa Sharp 1882.—(Described from Guatemala and known also

from central Mexico.) I have collected these specimens in the United States: ARIZONA—Apache Co.: East Fork of Black River in Apache National Forest, 30-VII-70 (3); West Fork of Black River in Apache National Forest, 31-VII-70 (33 adults and 2 larvae); Coconino Co.: Oak Creek s. Flagstaff, 8-VII-71 (3); Greenlee Co.: East Fork of Black River in Apache National Forest, 31-VII-70 (1); Yavapai Co.: Oak Creek s. Sedona, 9-VII-71 (13); NEW MEXICO—Catron Co.: Glenwood, 2-VII-69 (1); Eddy Co.: Sitting Bull Falls n.w. Carlsbad, 21-VIII-67 (2), and 4-VII-71 (2).

H. vulnerata (LeConte) 1874.—Type from Texas, with no record of locality or date. My collections within the United States are as follows: OKLAHOMA—Atoka Co.: Caney Creek, 31-VII-62 (2); Clear Boggy River, 31-VII-62 (32 adults and one larva), 26-VI-63 (60 adults and 30 larvae); Clear Boggy Creek near Caney, 21-IX-68 (adults and larvae turned over to students); Bryan Co.: Blue River, 31-VII-62 (270 adults and 129 larvae); Blue River at Armstrong, 21-IX-68 (20 adults and one larva); Sulphur Creek, 21-VI-63 (1); Caddo Co.: Washita River near Verden, 31-V-71 (349 adults and 22 larvae); Cherokee Co.: Illinois River near Tahlequah, 13-VIII-67 (1); Coal Co.: Clear Boggy River, 26-VI-63 (236 adults, 30 larvae, and 2 larval skins); Clear Boggy Creek near Tupelo, 21-IX-68 (adults and larvae turned over to students); Comanche Co.: East Cache Creek near Lawton, 1-VII-63 (41 adults and 7 larvae); Garvin Co.: Washita River north of Wynnewood, 1-IX-67 (3); Grady Co.: Washita River e. Chickasha, 6-X-63 (22 adults and 2 larvae); Johnston Co.: Pennington Creek n. Tishomingo (at Devil's Den and other sites), 19-IX-53 (1), 10-VII-60 (2), 30-VI-62 (8), 21-VII-62 (7 adults and one larva), 17-VI-63 (24 adults and one larva), 27-VIII-65 (1), 3-VIII-67 (5), 4-VIII-67 (17 adults and 5 larvae), 21-VII-68 (2), 12-VIII-71 (one larva); Blue River near Wapanucka, 21-X-62 (13 adults and 2 larvae) and 14-VI-63 (39 adults and 3 larvae); Pontotoc Co.: Blue River, 3-VII-62 (1); Washita Co.: Washita River e. Cordell, 4-VII-69 (78 adults and 3 larvae); TEXAS—Comanche Co.: Sabanna River w. De Leon, 29-V-69 (8); Coryell Co.: Leon River at Gatesville, 20-VIII-70 (300 adults and 12 larvae); Ellis Co.: Waxahatchie, 31-VIII-67 (2); Erath Co.: n. Stephenville, 4-X-66 (1); Grimes Co.: Navasota River, 31-VIII-67 (3 adults and 2 larvae); Hays Co.: San Marcos, 9-VIII-69 (1); Montgomery Co.: San Jacinto River, 25-VI-67 (2 adults and one larva); Travis Co.: Onion Creek near Austin, 19-VIII-70 (1); Wash-

TABLE 1.—Summary of Neotropical specimens of *Heterelmis* in Stovall Museum Dryopoid Collection

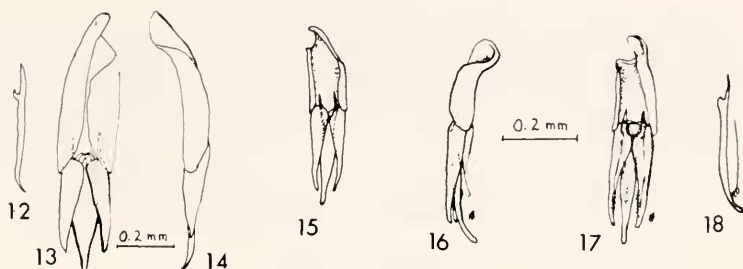
Country	Number of localities	Number of adults	Number of larvae
Bolivia	7	52	21
Brazil	13	63	5
British Honduras	5	54	0
Colombia	15	535	36
Costa Rica	12	239	13
Ecuador	8	605	70
El Salvador	6	16	0
Guatemala	12	348	16
Honduras	3	11	0
Mexico	113	3,737	474
Nicaragua	6	53	6
Panama	12	381	25
Paraguay	3	47	46
Peru	1	0	1
Trinidad	2	88	14
Venezuela	6	43	47
TOTAL	224	6,272	774

ington Co.: Brazos River, 31-VIII-67 (89 adults and 10 larvae); Zavala Co.: Leona River near Batesville, 19-VIII-70 (1).

In summary, these records for the United States are as follows: *H. glabra* (Horn)—61 adults and 5 larvae from 3 counties in Arizona, 10 adults and 3 larvae from one county in Texas (new state record); *H. obesa* Sharp—53 adults and 2 larvae from 4 counties in Arizona, 5 adults from 2 counties in New Mexico (new records for both states and for the United States); *H. stephani* n. sp.—71 adults and one larva from one county in Arizona; *H. vulnerata* (LeConte)—1,235 adults and 247 larvae from 11 counties in Oklahoma, 408 adults and 25 larvae from 10 counties in Texas.

In addition to the Nearctic records listed above, a summary of my Neotropical specimens collected prior to 1972 is shown in Table 1. This material awaits further study in the Dryopoid Collection of the Stovall Museum of Science and History.

The portions of the following key concerning Mexican and Central American species are largely based upon Hinton's key (1940).



FIGURES 12-18. *Heterelmis obesa*. 12. Penis (median lobe of aedeagus) in lateral aspect from right side. 13. Male genitalia in dorsal aspect. 14. Male genitalia in lateral aspect from left side. (From Hinton, 1940.) 15. *Heterelmis vulnerata*. Male genitalia in dorsal aspect. Traced from photograph. 16-18 *Heterelmis glabra*. 16. Male genitalia in lateral aspect from right side. 17. Male genitalia in dorsal aspect. 18. Penis in lateral aspect from right side. Traced from photographs.

KEY TO NORTH AND CENTRAL AMERICAN SPECIES OF HETERELMIS

1. Metasternal disk strongly, longitudinally concave for its entire length; tibiae of front legs clavate; basal four segments of front and middle tarsi with a conspicuous fringe of erect hairs; 2.2 mm long, 1.02 mm wide (based upon unique male from central MEXICO)..... *H. tarsalis* Hinton 1940
- 1'. Metasternal disk only feebly concave posteriorly; tibiae of front legs not clavate; basal four segments of front and middle tarsi without a conspicuous fringe of erect hairs..... 2.
2. Basal segment of each tarsus with two close, stout, short spines on inner apex (Fig. 11); parameres of male genitalia without an inner apical fringe of hairs (Figs. 13, 14)..... 3.
- 2'. Basal segment of tarsi without two stout spines on inner apex; parameres of male genitalia with or without an inner apical fringe of rather long hairs..... 5.
3. Length of prothorax usually more than 0.925 mm; median lobe of male genitalia with the basal median projection seen from the side gradually sloping behind; 3.5-4.0 mm long, 1.2-1.6 mm wide; in high mountain streams of central MEXICO..... *H. longula* Sharp 1887
- 3'. Length of prothorax usually less than 0.925 mm; median lobe of male genitalia when seen from the side strongly declivous behind (Fig. 12)..... 4.
4. Disk of pronotum with impressions; 2.5-3.3 mm long, 1.1-1.5 mm wide; in ARIZONA, NEW MEXICO, MEXICO and GUATEMALA..... *H. obesa* Sharp 1882
- 4'. Disk of pronotum evenly convex; 2.1-2.65 mm long, 1.0-1.25 mm wide; in central MEXICO..... *H. obesa plana* Hinton 1940
5. Disk of pronotum with distinct transverse impressions and usually with distinct oblique impressions as well..... 6.
- 5'. Disk of pronotum without impressions or with very feeble ones..... 8.
6. Parameres of male genitalia with an inner apical fringe of hairs (Fig. 17)..... 7.
- 6'. Parameres of male genitalia without an inner apical fringe of hairs (Fig. 15); 1.9-2.4 mm long, 0.9-1.1 mm wide; in TEXAS and OKLAHOMA. *H. vulnerata* (LeConte) 1874
7. Median lobe of male genitalia broad (0.05 mm wide between apices of parameres); 1.85-2.2 mm long, 0.9-1.1 mm wide; in MEXICO and CENTRAL AMERICA..... *H. obscura* Sharp 1882
- 7'. Median lobe of male genitalia narrow (0.017 mm wide between apices of parameres) (Figs. 16-18); 1.9-2.35 mm long, 1-1.1 mm wide; in ARIZONA, Big Bend region of TEXAS, MEXICO and CENTRAL AMERICA..... *H. glabra* (Horn) 1870

8. Basal segment of each tarsus with 3 short, stout spines (Fig. 6); body elongate, sides subparallel; elytra barely wider than thorax (Fig. 1); 2.3-2.6 mm long, 1.05-1.2 mm wide; in Santa Rita Mountains of ARIZONA.....*H. stephani* NEW SPECIES
- 8'. Basal segment of tarsus without such spines; body plump, sides arcuate; elytra noticeably wider than thorax; 1.7-2.1 mm long, 0.8-1.0 mm wide; GUATEMALA, TRINIDAD and TOBAGO.....*H. simplex* Sharp 1882

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LITERATURE CITED

- BROWN, H. P. 1956. Riffle beetles in Oklahoma. *Proc. Oklahoma Acad. Sci.* 36:38.
- BURKE, H. R. 1963. Notes on Texas riffle beetles (Coleoptera: Elmidae). *Southwestern Natur.* 8(2):111-114.
- DELEVE, J. 1968. IV. Coleoptera Elminthidae. *Mission zoologique belge aux îles Galapagos et en Ecuador* (N. et J. Leleup, 1964-1965), Vol. 1:211-272.
- GROUVELLE, A. 1888. Nouvelles espèces d'helmides. *Ann. Soc. Ent. France* 8(6):393-410.
- . 1896. Descriptions de dryopides (parnides) et helmides nouveaux. *Notes from Leyden Museum* 18:33-52.
- HINTON, H. E. 1936. Descriptions and figures of new Brazilian Dryopidae (Coleoptera). *The Entomologist* 69:283-289.
- . 1940. A monographic revision of the Mexican water beetles of the family Elmidae. *Novit. Zool.* 42(2):217-396.
- . 1971. The Elmidae (Coleoptera) of Trinidad and Tobago. *Bull. British Mus. Nat. Hist., (Entomology)* 26(6):247-265, pls. 1-9.
- HORN, G. H. 1870. Synopsis of the Parnidae of the United States. *Trans. American Ent. Soc.* 3:29-42.
- LECONTE, J. L. 1874. Descriptions of new Coleoptera chiefly from the Pacific slope of North America. *Trans. American Ent. Soc.* 5:43-72.
- SANDERSON, M. W. AND H. P. BROWN. 1959. Records of Oklahoma riffle beetles and a description of the larva of *Hexacylloepus* (Coleoptera: Dryopoidea). *Proc. Oklahoma Acad. Sci.* 37:67-72.
- SHARP, D. 1882. *Biologia Centrali-Americana, Insecta, Coleoptera. Haliplidae, Dytiscidae, Gyrinidae, Hydrophilidae, Heteroceridae, Parnidae, Georissidae, Cyathoceridae.* 1(2):1-144.
- . 1887. *Biologia Centrali-Americana, Insecta, Coleoptera. Staphylinidae, supplement. (Supplement: Parnidae).* 1(2):673-802.
- SPANGLER, P. J. 1966. The Catherwood Foundation Peruvian-Amazon Expedition. XIII. Aquatic Coleoptera (Dytiscidae; Noteridae; Gyrinidae; Hydrophilidae; Dascillidae; Helodidae; Psephenidae; Elmidae). *Mon. Acad. Nat. Sci. Philadelphia* 14:377-443.

2.0179 Synopsis of the Genus *Heterelmis* Sharp in the United States, with description of a new species from Arizona (Coleoptera, Dryopoidea, Elmidae).

Descriptors: Coleoptera; Dryopoidea; Elmidae; *Heterelmis stephani*, new species; Arizona, United States; synopsis.